

Safety & Buildings Division  
201 West Washington Avenue  
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## Wisconsin Building Products Evaluation

Material

AK DUCT™ Underground Polyethylene  
Air Duct and Fitting System

Manufacturer

CDC Enterprises, Inc.  
12280 255<sup>th</sup> Ave  
Zimmerman, MN 55398

### SCOPE OF EVALUATION

**GENERAL:** This report evaluates the use of AK DUCT<sup>®</sup> underground air duct and fitting system, manufactured by CDC Enterprises, Inc.

The (UDC) requirements below are in accordance with the current **Wisconsin Uniform Dwelling Code:**

- **Underground Ducts:** The AK DUCT<sup>®</sup> underground air duct and fitting system was evaluated for use as underground duct in accordance with **s. Comm 23.08(4)**.

The **IMC** requirements below in accordance with the current **Wisconsin Amended ICC Code:**

- **Underground Ducts:** The AK DUCT<sup>®</sup> underground air duct and fitting system was evaluated for use as underground duct in accordance with the general requirements of **IMC s. 603.7**.
- **Flood Hazard:** The AK DUCT<sup>®</sup> underground air duct and fitting system was evaluated for use as underground duct located in flood-hazard zone or a high-hazard zone in accordance with **IMC 603.7**.
- **Plastic Ducts and Fittings:** The AK DUCT<sup>®</sup> underground air duct and fitting system was evaluated for use as underground duct for use in forced-air heating and cooling systems, in accordance with **IMC s. 603.7.4**.

### DESCRIPTION AND USE

AK DUCT<sup>®</sup> and fittings are blue in color and are available in nominal diameters of 6, 8, 10, 12 and 14 inches. AK DUCT<sup>®</sup> consists of a high-density polyethylene (HDPE) liner covered with a layer of air-entrained polyethylene. The pipe and fittings are manufactured with male ends and are joined with a gasket and clamp assembly. When tested in accordance with ASTM D 2412, at the average wall thickness noted in Table 1, the pipe stiffness exceeds 8 psi at 5 percent deflection.

**TESTS AND RESULTS**

Pipe stiffness testing in accordance with ASTM D2412-02 Standard Test Method for “Determination of External Loading Characteristics of Plastic Pipe by Parallel-Plate Loading”, was conducted by Twin City Testing Corporation, Project No. 06-73517, on January 30, 2006. The pipe stiffness testing of 16 inch diameter duct resulted in **no** cracking, delamination or rupture when flattened between parallel plates to 70 % of the average inside diameter (point testing can be terminated as per standard). The average pipe stiffnesses are as follows:

<b>Stiffness (lbs/in./in.)</b>		<b>Load (lbs/lineal ft.)</b>
<u>@ 5% Deflection</u>	<u>@ 10% Deflection</u>	<u>@ 15% Deflection</u>
<b>10.6</b>	<b>8.0</b>	<b>189.9</b>

**LIMITATIONS OF APPROVAL**

**General:** The AK DUCT<sup>®</sup> underground air duct and fitting system shall only be installed underground or in concrete. The pipe shall not be used in exposed applications.

The AK DUCT<sup>®</sup> underground air duct and fitting system shall be limited to systems with a maximum air temperature of 150°F (66°C) at the discharge of the unit entering the duct system.

Installation shall be in accordance with this evaluation, the manufacturer’s published installation instructions, the **Comm** and **IMC** requirements. In the event of a conflict, the instructions in this evaluation shall govern.

The (UDC) limitations below are in accordance with the current **Wisconsin Uniform Dwelling Code:**

- **Underground Ducts:** The AK DUCT<sup>®</sup> underground air duct and fitting system shall be installed in accordance with the requirements of **s. Comm 23.08 (5)**.
- **Duct Insulation Systems:** The AK DUCT<sup>®</sup> underground air duct and fitting system shall be installed in accordance with the requirements of **s. Comm 22.17**.

The **IMC** limitations below are in accordance with the current **Wisconsin Amended IMC Code:**

- **Slope:** The pipe shall slope to allow drainage to a point provided with access in accordance with **s. IMC 603.7.1**.
- **Flood Hazard:** The AK DUCT<sup>®</sup> underground air duct and fitting system shall be installed in accordance with the requirements of **s. IMC 603.7.3**.

The **IECC** limitations below are in accordance with the current **Wisconsin Amended IECC Code:**

- **Supply and Return Air Ducts:** The AK DUCT<sup>®</sup> underground air duct and fitting system shall be installed in accordance with the requirements of **s. IECC 803.2.8 [Comm 63.0803(2)(f)]**

This approval will be valid through December 31, 2011, unless manufacturing modifications are made to the product or a re-examination is deemed necessary by the department. The product approval is applicable to projects approved under the current edition of the applicable codes. This approval may be void for project approvals made under future applicable editions. The Wisconsin Building Product Evaluation number must be provided when plans that include this product are submitted for review.

**DISCLAIMER**

The department is in no way endorsing or advertising this product. This approval addresses only the specified applications for the product and does not waive any code requirement not specified in this document.

Revision Date:

Approval Date: May 10, 2006 By: \_\_\_\_\_

Lee E. Finley, Jr.  
Product & Material Review  
Integrated Services Bureau